



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,177	11/24/2006	Alain Wagner	128852	6578
92793	7590	02/05/2010	EXAMINER	
Oliff & Berridge, PLC			SODERQUIST, ARLEN	
P.O. Box 320850			ART UNIT	
Alexandria, VA 22320-4850			PAPER NUMBER	
			1797	
			MAIL DATE	
			DELIVERY MODE	
			02/05/2010	
			PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/587,177

Applicant(s)

WAGNER ET AL

Examiner

Arlen Soderquist

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/22)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

Art Unit: 1797

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 9-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. First claim 9 requires the signal to be at least 5 times more intense when subjected to chemical or photochemical ionization. The only instant for that occurring in the instant description is when the resulting ions are detected by mass spectrometry. There is no indication that the requirement can be met by any other label or detection method (mass spectrometry) when chemical or photochemical ionization occurs. The one example shown might possibly enable the structure claimed in claim 11, however there is another problem that the disclosure fails to adequately address. That is the problem of whether the label affects the reaction by preventing it or enhancing it. For example, a catalyst that is somewhat shape or size selective may show decreased activity with the label present compared to the reactants without the label. See for example the cited Choo reference in which the abstract recognizes that the activity is dependent on the location and accessibility of the metal responsible for the catalytic effect. Even in the example shown, there is no comparison data to show that the label does not affect the reaction results in a way that the most active or selective catalyst for the reactants without the label is selected by the process. Nor does applicant teach what to do if the labels affect the outcome to either reduce or eliminate the effect of the label.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Kibby (US 2002/0182735). In the publication Kibby teaches the evaluation of a plurality of catalysts in microchannels. A combinatorial approach is used to identify optimum catalysts and/or reaction

conditions for performing the reactions. The results can be correlated to useful catalysts and reaction conditions for use in large scale reactors. The method can advantageously be used to generate a database of combinations of catalyst systems and/or reaction conditions using varied reaction conditions, which can provide a) a combinatorial library of product streams and a database including the combination of catalysts and reaction conditions to provide each product stream and/or b) the optimum combination of catalysts and reaction conditions for obtaining a desired product stream. Paragraph [0018] teaches a variety of reaction types that would include many if not all of the reaction units of instant claim 8. Paragraph [0095] teaches that the methods use a combinatorial approach to identify optimum reaction conditions and catalysts or catalyst combinations for performing the desired reactions and/or for providing a desired product. The methods involve obtaining a microchannel device that includes a plurality of channels, placing an effective amount of a catalyst (or a catalyst combination) from one or more catalyst libraries in a channel, repeating this step as necessary with different channels and different catalysts so that a plurality of catalysts can be simultaneously evaluated, and performing the desired reactions. The product streams are then preferably analyzed, more preferably by GC, HPLC or GC/MS. The reaction conditions, catalysts, and analytical information regarding the product streams are preferably stored in a database.

5. Claims 1-3, 6-8, 14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Tagge (US 6,602,714). In the patent Tagge teaches a workstation and methods for the high-throughput synthesis, screening and/or characterization of combinatorial libraries. In a preferred embodiment, the synthesis, screening, and/or characterization steps are carried out in a highly parallel fashion, where more than one compound is synthesized, screened, and/or characterized at the same time. The invention may be practiced at the microscale. The array may comprise a covered array. The array, array cover, and the stage may be modified as required for a variety of synthesis and/or analysis techniques. The array is easily interchangeable between different analytical instruments in an automated workstation, where the array is transferred between different synthesis, screening, and characterization stations. The invention also relates to a variety of methods for synthesis, screening, and characterization, which are adapted for combinatorial chemistry. Any of the embodiments of the invention may be used either alone or taken in various combinations. Column 17, lines 26-37 teach an exemplary embodiment using

the array for the rapid screening of olefin polymerization catalysts. Several techniques for the characterization of compounds in the array, which are not consumptive, and allow for multiple characterization steps on the same array are possible. Accordingly, the array allows for the rapid screening of various polymer catalysts, the rapid synthesis of combinatorial libraries of polymers, and the characterization of combinatorial polymer libraries. These methods will allow not only for the rapid discovery of new leads in polymer and catalyst chemistry, but also for rapid optimization of leads. Column 19, lines 28-34 teach that the activity of a catalyst is often related to the heat generated by a reaction. Using an infrared camera, it is possible to screen an array of catalysts to monitor the activity of the catalysts and estimate the kinetic data of the reactions. Figure 9 shows a thermal image of various catalysts used to polymerize ethylene. Columns 25-27 teach the incorporation of at least one radio-labeled compound. The compounds may be synthesized by adding at least one compound, such as a catalyst to each well, and providing at least one radio-labeled reagent in at least one well. The at least one radio-labeled reagent reacts in at least one well to form a radio-labeled compound. Materials other than the compound of interest, are removed, and the array is transferred to an autoradiograph. The radioactivity of at least one well, preferably more than one well, is measured in a parallel manner. As an example, a process for the determination of comonomer content in a polymer is described. This provides a method to measure the comonomer content of a large array of copolymers simultaneously, which will reduce analysis time by two orders of magnitude compared to conventional techniques. The technique provides a means for the rapid discovery of new catalysts for copolymers such as linear low density polyethylene, of which several million tons are produced every year. Monomers and labeled comonomers are then fed into a 2-dimensional array of catalysts. If the autoradiography measurement are taken following reaction calorimetry, sample mass may be determined from integration of activity data. It is to be understood that the digital autoradiograph may also be used independently. Each catalyst is likely to incorporate different proportions of monomer and comonomer into the resulting polymer. After the reaction is stopped and the volatile solvent, monomer, and comonomer are removed, the array is transferred to a modified commercial digital autoradiograph. The resulting digital image indicates which polymers contain the most radiolabeled comonomer. This section also teaches the use of a mass spectrometer to detect the molecular mass of each

component/product eluting from the array, as well as the masses produced by a molecule when it fragments upon being ionized at the mass spectrometer ion source. The information from these masses is used to identify the product profile as well as to provide both activity and selectivity measurements for the catalyst or process occurring in each microwell.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 4-5, 12-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tagge as applied to claims 1-3, 6-8, 14 and 17 above, and further in view of Nayar (US 2004/0077096). Tagge does not teach mass based labels in the detection or other types of mass spectrometry detection methods.

In the publication Nayar teaches a process and apparatus for rapidly screening materials using mass spectrometry. In the method an array of materials is screened for characteristics such as catalytic activity and/or selectivity. Paragraph [0023] teaches a variety of detection techniques including gas chromatography-mass spectrometry. Beginning at paragraph [0053], the use of stable isotopes as labels to determine the characteristics of the reaction is discussed. Example 1 shows the process applied to 3 catalysts including using the activity information to rank the catalysts. Example 5 shows the use of isotope labeled reactants with the catalyst of example 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a mass dependent label such as the carbon 13 of Nayar or use the

carbon 14 mass dependent signal of Tagge as a label in the tagged method because of its ability to show activity and other reaction kinetics as shown by Nayar. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use other types of mass spectrometers to detect the compounds of Tagge because of their known ability to separate and detect various materials such as the chromatography-mass spectrometer combination taught by Nayar.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited art relates to catalytic reactions, use of labeled reactants and derivatization to enhance detection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571)272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Arlen Soderquist/
Primary Examiner, Art Unit 1797